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EXAMINER	
PIZIALI, ANDREW T	

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte YVES TERMONIA and JAMES EDMOND VAN TRUMP

Appeal 2008-6015
Application 10/719,813
Technology Center 1700

Decided: January 22, 2009

Before CHUNG K. PAK, TERRY J. OWENS, and CATHERINE Q. TIMM, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

The Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1-3, 6-8, 10 and 11. Claims 4, 5, 9 and 12-20, which are all of the other pending claims, stand withdrawn from consideration by the Examiner. We have jurisdiction under 35 U.S.C. § 6(b).

The Invention

The Appellants claim a nonwoven fabric comprising entangled helically crimped asymmetric bicomponent fibers. Claim 1 is illustrative:

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1. A non-woven fabric comprising a plurality of entangled helically crimped asymmetric bicomponent fibers comprising a first crystallizable polyester component and a second crystallizable polyester component, said first crystallizable polyester component exhibiting a lower rate of crystallization than said second crystallizable polyester component, said fibers being characterized by a denier range of 0.5 to 6 denier, said fibers exhibiting at least 50 crimps per inch with a crimp radius of curvature of 0.2 mm or less and wherein said fibers are preponderantly entangled with one another, and wherein further said fibers are preponderantly oriented in a well-defined plane said non-woven fabric being characterized by a bulk density of 0.2-0.4 g/cm^3.

The References

Kobayashi	US 4,038,452	July 26, 1977
Aranaga (as translated)	JP 11-158733	Jun. 15, 1999

The Rejection

Claims 1-3, 6-8, 10 and 11 stand rejected under 35 U.S.C. § 103 over Aranaga in view of Kobayashi.

OPINION

We affirm the Examiner's rejection.

The Appellants argue the claims as a group (Br. 3-7). We therefore limit our discussion to one claim, i.e., claim 1. *See* 37 C.F.R. § 41.37(c)(1)(vii) (2007).

Issue

Have the Appellants shown reversible error in the Examiner's determination that the applied references would have led one of ordinary skill in the art to make Aranaga's fabric with a bulk density of 0.2-0.4 g/cm^3 and fibers that are preponderantly oriented in a well-defined plane and have at least 50 crimps per inch and a crimp radius of curvature of 0.2 mm or less?

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Findings of Fact

Aranaga discloses a nonwoven fabric comprising two polyesters having fiber fineness of 0.5 to 6 denier (p. 5 at ¶ [00005]).

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Kobayashi discloses a bulky nonwoven fabric comprising spontaneously crimped acrylonitrile fibers entangled with fibrillated acrylonitrile polymer fibers and having an apparent density of 0.05 to 0.25 g/cm^3 (col. 1, ll. 4-8; col. 2, ll. 13-14).[1] The spontaneously crimped acrylonitrile fibers have 20 to approximately 80 crimps per inch and a radius of curvature below 1.5 mm (col. 2, ll. 45-57; col. 3, ll. 1-5). Kobayashi states that "[t]he non-woven fabric of the invention possesses good uniformity in surface density and flatness" (col. 5, ll. 13-14).

Analysis

The Appellants argue that the bulk density of Kobayashi's acrylonitrile fabric cannot be directly compared with that of Aranaga's polyester fabric because the bulk density depends on the polymer density, and acrylonitriles have a density of approximately 0.81 g/cm^3 whereas polyesters have a density of 1.38 g/cm^3 (Br. 4-5).

As indicated by the Examiner (Ans. 6-7), if Kobayashi's bulk density range is adjusted for the density difference between Kobayashi's acrylonitrile and Aranaga's polyester, the bulk density range is 0.09 to

[1] Kobayashi states that "[b]y the term 'spontaneous crimp' used herein is meant crimp which spontaneously develops when latently crimped fibers are maintained at elevated temperatures and a relaxed state" (col. 1, ll. 64-67), and that "[b]y the term 'apparent density' used herein is meant the ratio of surface density, i.e. weight per unit area (g/cm^2), of a web to its thickness (cm)" (col. 2, ll. 20-22).

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0.43 g/cm^3,[2] which encompasses the bulk density range recited in the Appellants' claim 1.

The Appellants argue that "given the significantly different densities of these polymers, one of skill would not look to teachings of acrylonitrile fabrics to prepare polyester fabrics" (Br. 4), and that "Kobayashi provides no method through which the bulk density of the fabric may be increased" (Br. 6).

One of ordinary skill in the art making a fabric from a polymer other than Kobayashi's acrylonitrile, such as Aranaga's polyester, would have found Kobayashi useful for determining the apparent density range that provides desirable bulkiness and softness and acceptable strength (col. 2, ll. 13-19). Kobayashi's teaching that above the upper apparent density limit of 0.25 g/cm^3 the fabric is poor in bulkiness and softness (col. 2, ll. 13-19) would have indicated to one who is of ordinary skill in the art and, accordingly, has ordinary creativity, that the corresponding upper apparent density limit for providing the same bulkiness and softness using a fabric made from a polymer having a higher density than Kobayashi's acrylonitrile would be higher in proportion to the polymer densities. *See KSR Int'l. Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1742 (2007) ("A person of ordinary skill is also a person of ordinary creativity, not an automaton"). Likewise, Kobayashi would have indicated to one of ordinary skill in the art that a fabric made from a higher density polymer and having Kobayashi's lower apparent density limit for acceptable strength (col. 2, ll. 16-19), would have an apparent density higher than that of Kobayashi's fabric in proportion to the densities of the polymers. As pointed out above, the higher bulk density

[2] 0.05 x 1.38/0.81 = 0.09. 0.25 x 1.38/0.81 = 0.43.

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range for a polyester would be 0.09 to 0.43 g/cm^3, which encompasses the bulk density range recited in the Appellants' claim 1.

The Appellants argue that Kobayashi fails to disclose or suggest a fabric wherein the fibers are oriented in a well-defined plane (Br. 5-6). The Appellants argue that Kobayashi discloses: "Simultaneously with crimp development, the web is shrunk in surface area and increases in thickness. Any outer mechanical force which restricts such dimensional change should not be given" (col. 7, ll. 57-59) (Br. 5). That method, the Appellants argue, is contrary to and a teaching away from orienting fibers in a well-defined plane by using two constraining surfaces which limit the thickness of the fabric (Br. 5-7).

"[D]uring examination proceedings, claims are given their broadest reasonable interpretation consistent with the specification." *In re Translogic Tech. Inc.*, 504 F.3d 1249, 1256 (Fed. Cir. 2007), quoting *In re Hyatt*, 211 F.3d 1367, 1372 (Fed. Cir. 2000).

The Appellants disclose that constraining the fibrous mat while heating it to develop the crimp produces a fabric that is denser and tougher and has improved stretch recovery (Spec. 4:5-17; 5:4-23). The Appellants, however, do not limit the term "well-defined plane" to a fabric having a crimp equivalent to one produced in that manner. Thus, the broadest reasonable interpretation of "well-defined plane", consistent with the Appellants' Specification, encompasses Kobayashi's good flatness (col. 5, ll. 13-14).

Conclusion of Law

The Appellants have not shown reversible error in the Examiner's determination that the applied references would have led one of ordinary

skill in the art to make Aranaga's fabric with a bulk density of 0.2-0.4 g/cm^3 and fibers that are preponderantly oriented in a well-defined plane and have at least 50 crimps per inch and a crimp radius of curvature of 0.2 mm or less.

DECISION/ORDER

The rejection of claims 1-3, 6-8, 10 and 11 under 35 U.S.C. § 103 over Aranaga in view of Kobayashi is affirmed.

It is ordered that the Examiner's decision is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

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